

# Government by Refrigeration---Cooling Congress and the President. Unique Cold Weather Canneries Used to Make Them Comfortable

Tests Now Being Made by Government—Fighting Hot Weather With Fire—The More Coal Burned the More Cold Produced—Rooms Chilled by Snowclad Radiators—Unique Cooling Plant Devised to Make Taft Comfortable—Capitol Now to Have Seventy-Two Thousand-Dollar Plant—No More Extra Summer Session Terrors—Cold Waves Always on Tap—Application to Office Buildings, Hospitals, Theatres and Private Residences—Experiments Explained by Physicist in Charge.

BY JOHN ELPRETH WATKINS.  
Washington, D. C., August 10.—Sizzards, like his antacid majesty, can best be fought with fire.

This the physicist of Uncle Sam are proving by a series of experiments, just now most reasonable, timely and apropos.

They are banishing heat with flame—are burning coal to produce cold. And, unfortunately, they are discovering that it requires more coal to cool rooms than to heat them.

Paradoxical as all this may sound, it is none the less true. I have just spent a half day with the men who are doing this interesting work—developing the fine art of keeping cool.

My attention had been called to this enterprise by the announcement that \$25,000 was to be expended in cooling the Senate and House wings of the Capitol by a system under investigation at the National Bureau of Standards, and to this great institution I hid myself, to be received by Dr. Samuel W. Stratton, the director. Immediately he had me ushered in to Professor Edward B. Rosa, the chief physicist of the bureau.

Beads of perspiration stood upon my brow when I entered Professor Rosa's domain, and my collar was wilted, while my cuffs were fast melting. But the physicist invited me into a room where the climate was as salubrious as a balmy day in mid-October. Here I proceeded to wax cool and inquisitive.

An ermine mantle of snow covered a radiator against the wall, and against this coil of pipes—like the steam radiator which heats us in winter—an electric fan was blowing its breath, which came off chill and bracing. The draught—the hot draft, he it known, the enervating, debilitating fumes of mid-summer.

A big cooling stove set up in another room was, with contented purring, gobbling up heat and breathing out cold at a rate which would make a polar bear dance with glee. In still another room I saw a young physicist watching a hydrometer and thermometer that were receiving the air which an electric fan was pumping over two huge cakes of ice that stood in a big metallic tub.

Churn Blizzards in Hot Room.  
And from here I went into the stifling hot room where they actually manufacture this cool weather that is kept on tap in the rooms above.

You would think that this work of churning up ice is a simple matter, a cool task, and a comfortable one this sizzling weather. But you are wrong, dead wrong. Old Horny himself cannot occupy a sanctum much more uncomfortable than this modern cave of ice. The physicist distributed the cool weather, which puts vigor in the blood and sinew of Professor Stratton's

## FEARFUL BURNING ITCH WAS CURED

By Cuticura Soap and Ointment.  
Another Man Had Itching on Scalp.  
Hair Fell Out, Leaving Bald Spots.  
Now Hair Has Grown, Thanks to  
Cuticura Soap and Ointment.

"I deem it my duty to tell about a cure that the Cuticura Soap and Ointment have made on myself. My trouble began in spots breaking out right in the middle of my hair on the forehead, and spread over the front part of the top of my head from ear to ear, and over my ears which caused a most fearful burning itch, or eczema. For three years I had this terrible breaking out on my forehead and scalp. I tried my family doctor and he failed to cure it. Then I tried the Cuticura Soap and Ointment and used them for two months with the result of a complete cure. Cuticura Soap and Ointment should have the credit due, and I have advised a lot of people to use them." (Signed) C. D. Harrington, Creek, N. C., Jan. 26, 1911.

"I wish to say that I have been suffering with an itching on my scalp for the past few years. My hair fell out in spots all over my head. My scalp started to trouble me with sores, then the sores healed up, and crusts formed in the scalp. Then the hair fell out and left me three bald spots the shape of a half dollar. I went to more than one doctor, but could not get any relief, so I started to use the Cuticura Remedies. I tried one bar of Cuticura Soap and some Cuticura Ointment, and felt relieved right away. Now the bald spots have disappeared, and my hair has grown, thanks to the Cuticura Soap and Ointment. I highly recommend the Cuticura Remedies to all who are suffering with scalp trouble." (Signed) Samuel Stern, 236 Floyd St., Brooklyn, N. Y., Feb. 7, 1911.

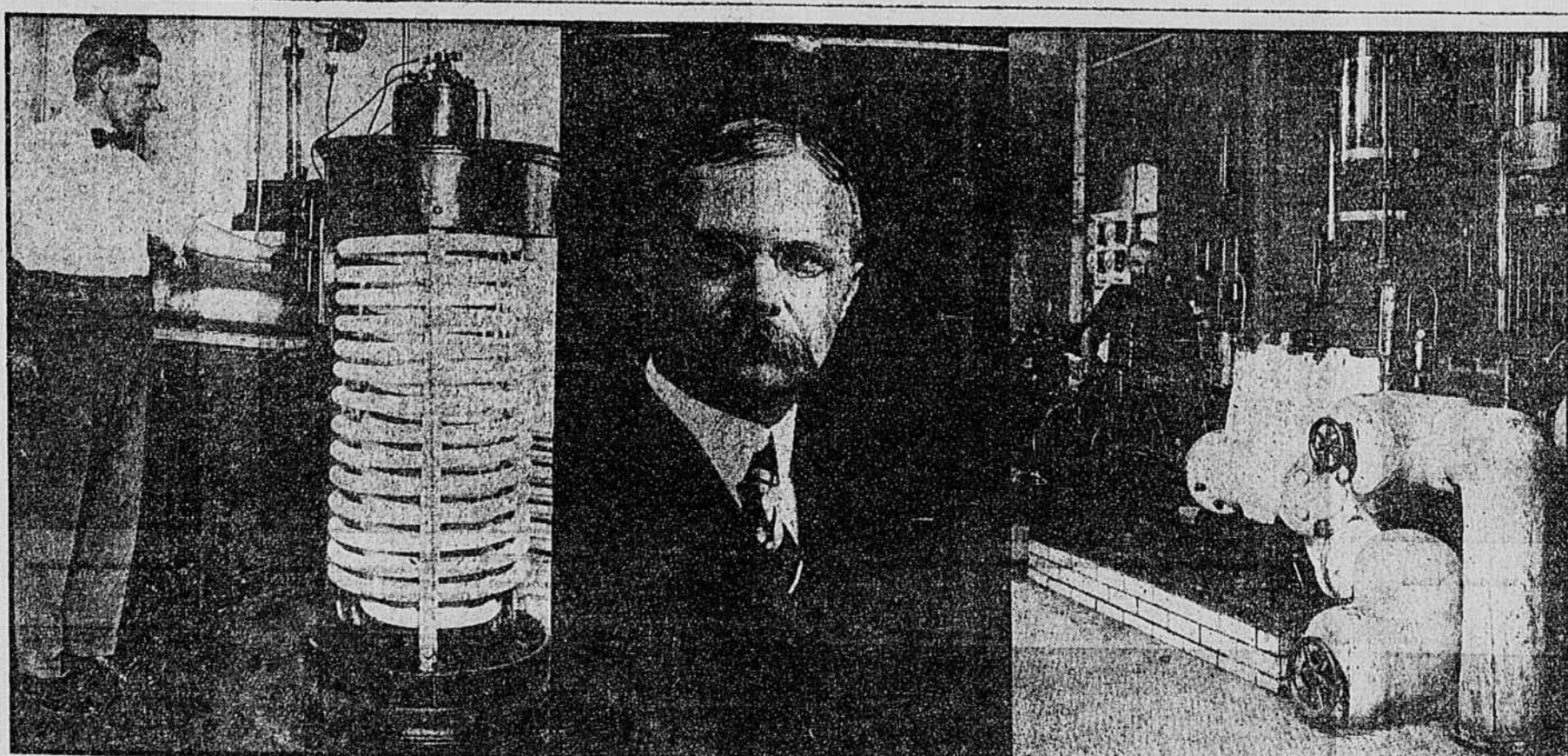
Although Cuticura Soap and Ointment are sold everywhere, a liberal sample of each, with 32-p. book on the skin, will be sent post-free, on application to Potter Drug & Chem. Corp., Dept. 93, Boston, Mass.

## Can Cancer Be Cured? IT CAN

The record of the Kellam Hospital without parallel in history, having cured to stay cured permanently, without the use of the knife or X-ray, over 90 per cent. of the many hundreds of sufferers from cancer who have been treated during the past fifteen years.

We have been endorsed by the Senate and Legislature of Virginia. We guarantee our cures.

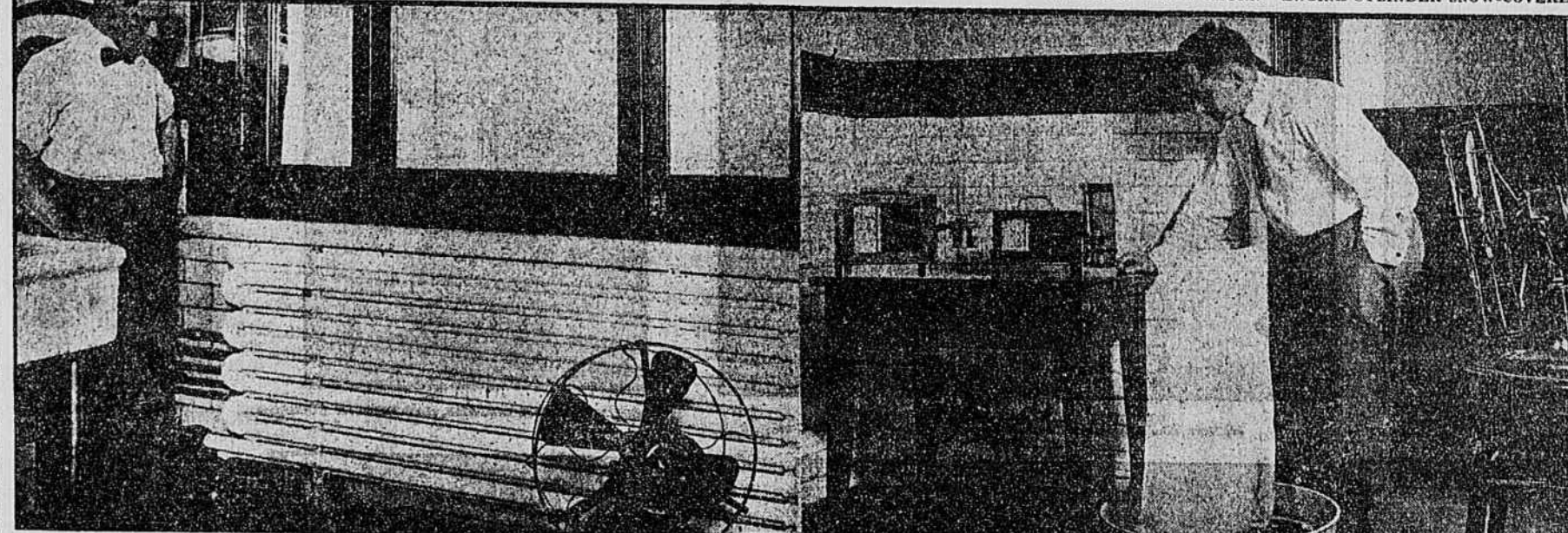
Physicians treated free.  
**Kellam Hospital**  
1617 West Main Street,  
RICHMOND, - - - VIRGINIA



COOLING STOVE. COVER OFF, SHOWING SNOWCLAD COIL.

PROFESSOR EDWARD B. ROSA.

THE COOL WAVE CHURN. ENGINE CYLINDER SNOW-COVERED.



A SNOW CLAD RADIATOR.

BLOWING AIR OVER ICE ONTO INSTRUMENTS.

staff of scientific assistants. (Or, at least, into such of them as are fortunate enough to be engaged in work requiring a cool atmosphere; for, remember, the system is intended to benefit the work, not the workers.)

And yet, while my collar and cuffs were again waiting down there in this shadowy tophet, Professor Rosa, did nothing less than step up to the engine cylinder, scrape off some pure and vigor snow, roll it into a ball, and proceed to munch it with the satisfaction of an archer who tastes winter's first layer of good sledding. So this white engine cylinder, which masqueraded in the guise of an asbestos packing, had, in reality, a snow covering just as bona fide as that which Peary "negotiated" upon the utmost tip-top of this spinning top upon which we buzz and bustle through celestial space.

It's like going down into the furnace room to freeze ice cream for Christmas dinner—this cool weather manufacture—but, as I said, it is the Peary way. It can be done to a finish, for wheels must go around to churn either ice cream or artificial cool weather, only in the latter process the machinery is so bulky that it takes a steam engine to run it, and you can't make steam without fire—or if you can, it requires heat as hot as fire!

The Cold-Wave Cannery.

It is far too hot for me to describe, only to ponder over, the details of this machinery, for neither you nor I sit ensconced amid the salubrious manufactured autumn breezes or mountain zephyrs. In the good old days when you watched Dinah salt the ice cream freezer and wondered why, you went to sound the paternal oracle and learn of some elementary physics—among other things the law that a solution of salt and water requires much greater cold to freeze it than just plain water out of the old pump. And this little simple law is very important in all this modern art of manufacturing cool weather indoors. Substitute cold water for hot water in the radiators of your house and you cool your house instead of heating it. But to get your water cold enough to make a perceptible chill during this summer weather you must cool it down below its natural freezing point—a delicate prospect for that superman, the plumber, for the pipes would freeze up and burst before you would have any cool weather on tap. Salt your water, then, and it won't freeze till far colder than would even be needed to give grandmother a touch of "throaty" or pneumonia. That is simple enough, to be sure. But you do not pile table salt or rock salt into your modern cool weather plant. Calcium chloride is the salt used here, and if you do not know what that is, you will have to go to the cyclopaedia, and if you do not know what that is, make your floor of the cool-wave maker which I saw was a big tank, ample enough for Mother Hippo, out at the Zoo, to take her daily soak in. And in this great receptacle the brine is mixed to the proper proportions.

Over against the wall is a big cylinder of ammonia water, such as you use to clean your clothes, and this is being subjected to heat, which drives off the ammonia gas, which in another cylinder is condensed under pressure into pure liquid ammonia. And in a third cylinder this condensed ammonia is

rapidly evaporating, which process produces a chill, such as your skin feels when alcohol evaporates against it, for it is a law of nature that evaporation produces cold, as you perceive when ever the electric fan evaporates the sweat of your brow these torrid August days.

Distributing the Blizzard.

Now the brine is pumped by the steam engine into a coil of pipe which winds around inside the ammonia cylinder, where the evaporation draws the heat out of the brine, through the metal of the pipe. And that is just how the brine is cooled. Another steam pump sends this chilled brine up through the building and, by way of a tunnel, into the neighboring building as well. It rushes through big pipes, which have thick jackets of cork, the material which serves best in keeping the cold from leaking out. While I was watching the operation the brine was going up into the two buildings at a temperature, by your household thermometer, of 24 degrees below freezing, and, after giving off its cold in the various rooms, was coming back warmed up to 15 degrees below freezing, from which it was being cooled again and pumped back through the radiators distributed about the various rooms.

How did the snow get on the radiators? It is the same process by which the ice pitcher "sweats." If the pitcher were filled with brine as cold as this, too, would be snow-covered instead of merely clad in foggy vapor. But the pitcher does not "sweat," as do you, to-day, through its pores. Whenever air comes in contact with something very cold the moisture is "precipitated" out of it and deposited upon that body, whether it be a pitcher of ice water or a radiator filled with brine chilled below the freezing point. So the snow upon the engine cylinder and the radiators is the moisture that has been squeezed out of the surrounding air. And this brings us down to brief mention of how this system is banishing from these rooms not only Mr. Sizzard, but his boon companion and our other arch foe, old General Humidity, of whom you are reading so much in the papers these days, but of whose

pedigree you, perhaps, know but little.

Old General Humidity Surrenders.

Mr. Sizzard is not such a bad fellow if he does not bring his friend, General Humidity, along with him. And outside such arid regions as our southwest the two are as inseparable as Damon and Pythias. But the system being perfected by Professor Rosa vanquishes the two together. While Mr. Sizzard is being skinned alive the general's white hide is being hung upon the cold-distributing radiators.

"In hot weather we generally want our rooms about 5 degrees cooler and 10 per cent. drier than the air outside," Professor Rosa explained. "If out would, even on a very hot day, come indoors to remain in a room at much as 15 degrees cooler and 20 per cent. drier than the outdoor climate he would probably take cold. So there is no absolute standard of artificial indoor climate to be maintained day after day. If the temperature outside is 85 degrees it should be reduced indoors to 80 degrees, or if it is 90 degrees outside it should be made 85 degrees within. But the chief object, to get comfort, is to reduce the humidity which, if low enough to evaporate perspiration, means comfort. The ideal humidity in which to live these days is somewhere between 50 and 70 per cent. Above 75 means discomfort, and above 80 suffering. A chilled brine plan such as this is self-regulating and cannot go to extremes of low temperature and humidity."

Within fifteen minutes after the chilled brine was turned into one radiator the humidity in the room had fallen 5 per cent. and accumulated in a crust of dry snow an eighth of an inch deep. When it had reached a thickness of half inch it commenced to look glazed and wet. The fall in humidity had now reached 10 per cent. Then the melting snow began to drip into a large stationary pan underneath, from which a pipe carried it out of the room. And thus was the oppressive humidity taken out of the room. Meanwhile, the electric fan blowing against the radiator was driving back into the room the air which was being thus dried by contact with the frosted coil of pipes. By the time the humidity had dropped 10 per cent. the temperature had fallen about 5 degrees, and this balance was then maintained throughout the day. Solid comfort reigned within those four walls and no one wanted the windows open. Banish the thought! This scheme of having the cold radiators immediately in the rooms is known as the "direct system," to which slightness may be added by placing the radiators in closets grates above and below, a fan inside sucking the warm, moist air in at the top grating and blowing the dry, cool air out at the bottom. In the new electrical laboratory now to be added to the Bureau of Standards group of structures one of these closets is to be built in the wall between each pair of rooms to be cooled. The building is to be 150 feet long by 55 feet wide and five stories high, and sixteen closets will cool and dry thirty-two rooms. But this precaution is to be taken, not on account of the comfort of the employees, but for the protection of the delicate instruments, whose accuracy is disturbed by the condensa-

tion of humidity upon their insulations.

The other scheme for cooling buildings thus with chilled brine is known as the "indirect method." Where this is used great radiators are placed in chambers, in the basement or other convenient places, whence big blowers force the cooled and dried air through flues and out of registers distributed about the rooms.

Congressmen in Cold Storage.

Our big law factory on Capitol Hill will, by one or the other of these systems, be fortified forevermore against summer extra session terrors, and Mr. Elliott Woods will profit by Professor Rosa's researches before he makes his final plans.

Now, you are asking yourself, as I did Professor Rosa, if the mind of man has devised all of these wondrous things why, in the name of all that stews and sizzles, is the hide of man not profiting by them in hotels and theatres and the sacred precincts of the home? I am told that although the system has already been installed in commission houses, cold-storage establishments, breweries and the cuisines of our great hotels for the protection of foods, furs and textiles, God's living creatures are not yet considered sufficiently worthy of such comfort, except in a few scattered instances.

The only great American office building thus cooled appears to be the New York Stock Exchange, which now can probably boast of being the

best refrigerated building devised for the habitation of man.

The refrigerating machine, which cools both the big exchange room and the safe deposit vaults, has a capacity equivalent to the melting of 300 tons of ice per day. It is operated with exhaust steam from engines, and uses four and one-half tons of steam per hour in cooling the space mentioned.

This is an economical method," said Professor Rosa, "as the exhaust steam would otherwise be thrown away. Air is taken in above the roof—170 feet above the sidewalk—filtered through cheesecloth, then cooled and blown into the big Stock Exchange room, containing 1,250,000 cubic feet. The big brine coils that cool the air consist of four miles of galvanized iron pipe."

Some few theatres offer canned cool weather on tap, but they have gone into the enterprise upon a scale merely large enough for advertising purposes and far too insignificant for appreciable effect.

Theatre Audiences Needn't Sweat.

One of these plants has just been installed in the State, war and navy building, in Washington, at a cost of \$9,000. True, its function is to supply ice for the building rather than to cool it, but pipes, radiators and fans are the only accessories that would be needed to convert this little ice factory into a refrigerating plant big enough to cool a theatre of ordinary size.

"Suppose it cost \$20 a day to operate it? Would it be a difficult matter to get the money back at the box office?" asked Professor Rosa.

"During the hottest weather," he added, "it would cost less than \$1 per day per room of the average size of your big rooms in public buildings, or from 25 to 50 cents per day per bedroom in hotels. We estimate that to cool buildings it costs \$1 per ton of refrigeration, which adopted unit means the amount of cooling produced by the melting of a ton of ice."

Why will not the direct saving of human life give as great a return for this investment as the saving of furs. Oriental rugs and the reserve supply of eggs, meat and poultry, stored away to protect, with other things, the high cost of living?

No hospitals are known to have adopted such a system, even for such emergencies as those of the first ten days of July, wherein seven hundred of our citizens had their lives frizzled by the heat of the elements. Some medical institutions have installed small plants for the freezing of precious corpses, needed for dissection, but have considered it gross extravagance to extend the system towards where mere live bodies lie in torture such seasons as this.

"We read of the millionaire dying in his palace from the heat," said the physicist, "whereas in such cases relief can be had by simply placing cakes of ice in a tub and letting an electric fan blow over it onto the sufferer. Several hundreds of pounds of ice would be needed per day, depending on the size of the room, and although you might suppose that this air, coming over the melting ice, would be charged with increased humidity, as a matter of fact the ice greatly reduces the humidity and the patient receives air that is not only cooler but

drier than that which the fan would deliver were the ice not in the path of the breeze."

It was at this point that I was ushered into the room where the tests were being made with the fan and ice. Here are in progress careful measurements to determine the exact amount of ice needed for given amounts of cooling and drying of the air, and the apparatus measuring the fall of temperature and humidity record themselves upon moving paper bands.

Refrigerating the President.

President Taft cools himself by this system, somewhat elaborated. Directly under his office room there is an ice box twelve feet square and eight feet deep. Into this two or three tons of ice are placed, on racks, each summer day that he works in this room. A big electric blower carries the outside air through this chest, where the heat and humidity are reduced, and thence upward through ducts to registers opening into the room where the chief executive does his work.

For hospital wards the ideal device is what I termed the "cooling stove"—a sheet-iron cylinder about four and one-half feet high, grated about the top and bottom. Inside is a 100-foot coil of one-inch iron pipe, through which an electric fan sucks the air, which enters hot and humid at the bottom, but comes out cold and dry at the top. While standing near this cool-wave churn I positively shivered. It received its brine from the central plant.

The problem of the cooling hotel bedrooms is complex, according to Professor Rosa, because of the irregularity of their occupancy. It would be extravagant to keep the chilled brine circulating in all at once if only half of them, say, were occupied, and the question of keeping windows down would further complicate matters. But the cooling of hotel dining rooms and parlors is perfectly feasible. Hotels which now operate five to ten ton machines for chilling foods and wines could probably do off to a hundred dollars by installing that of 100-ton plants. Compared with that of hotels, the problem is simple in theatres, where one single space is to be cooled.

A millionaire's mansion could readily be refrigerated by the \$9,000 plant mentioned, but the cost of fuel and attendants would be greater than to heat the same house in winter—for, as we said, it takes more coal to produce cold than to create heat. Nor could the same radiators used for heating be employed for cooling, on account of the necessity of drip pans. An installation for the "indirect system" mentioned could actually be used for both heating and cooling, but separate radiators would, after all, be cheaper in the end.

Central plants may in the future pipe chilled brine as they now do steam, to communities, but the cost of such a system would be prohibitory, save in exceptional cases. After all the cost of refrigerating human habitations, both great and small, will depend upon the cost of fuel, for, as said of the street, we can best fight with fire both hot weather and the devil, which, I wish to remark, are the same.

(Copyright, 1911, by John Elfreth Watkins.)

## How to Make a Real Wrinkle Remover

(From Fashion Reporter.)

"In these days of cleverly advertised 'beautifiers' of 57 varieties and more, it is hard for any woman to believe that she can make a simple home remedy which will do her much more good, and cost her much less than the average made preparation. Take the subject of wrinkles, for instance. There is nothing in the world so effective for removing or preventing wrinkles, baggy cheeks and double chin as a solution of axolite and witch hazel.

Get an ounce of pure powdered axolite from any drug store, dissolve the full ounce in a half pint of witch hazel and use the mixture daily as a refreshing lotion. The quick and satisfactory results will surprise you. Even after the very first application there is a marked improvement. The wrinkles are less in evidence and the face has a firm, 'solid' feeling that is very comforting.

## Prices On Summer Goods Reduced

\$1.00 Maple Porch	83c
Rockers now	
\$5.50 Maple Porch	\$2.98
Rockers now	
\$1.25 Lawn Benches,	98c
solid oak, now	
\$3.50 Leatherette	
Go-Carts, with hood,	\$1.98
now	
\$15.00 Reed Go-Carts, with	
lace parasol,	\$12.98
now	
\$13.50 Reed Go-Carts, with	
lace parasol,	\$11.50
now	
\$16.00 Reed Go-Carts, with	
lace parasol,	\$14.30
now	

And many other articles to go at like reductions.

Cash or Credit.

**Rothert & Co.**  
Fourth and Broad.

**Fonticello**  
WATER

**Sauers**  
THE BEST FLAVORING EXTRACT  
AT YOUR EVERY FEAT

## HandBags for Milady

Hand Bags of quality—neat, correct in shape and material and perfect in workmanship. Every approved style in Rountree quality.

Aviation Bags, the newest creation for the summer girl. All colors, styles, sizes and materials. Prices from \$1.00 up.

"Factory to You."

**H.W. Rountree & Bro.**  
**Trunk & Bag Co.**  
703 East Broad Street.

## Don't Persecute your Bowels

Cut out cathartics and purgatives. They are brutal.

Small Pill, Small Dose, Small Price

Genuine must bear Signature

Beutelschlag

Small Pill, Small Dose, Small Price

Genuine must bear Signature

Beutelschlag

Small Pill, Small Dose, Small Price

Genuine must bear Signature

Beutelschlag

Small Pill, Small Dose, Small Price

Genuine must bear Signature

Beutelschlag

Small Pill, Small Dose, Small Price

Genuine must bear Signature

Beutelschlag